

Appl. No. 10/605,482  
 Amdt. dated November 06, 2007  
 Reply to Office action of June 20, 2007

### Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

### Listing of Claims:

- 1 (currently amended): A multiple step-sized levels adaptive method for time scaling to  
 5 synthesize an  $S_3[n]$  signal from an  $S_1[n]$  signal and an  $S_2[n]$  signal, the method comprising:
- (a) calculating a ~~first-magnitude~~ temporary magnitude of a cross-correlation function of the  $S_1[n]$  signal and the  $S_2[n]$  signal according to a ~~first-index~~ temporary index;
  - 10 (b) comparing the ~~first-magnitude~~ temporary magnitude with a threshold value;
  - (c) if the ~~first-magnitude~~ temporary magnitude is smaller than the threshold value, calculating a first reference magnitude of the cross-correlation function of the  $S_1[n]$  signal and the  $S_2[n]$  signal according to a first reference index ~~behind~~ lagging the first-index temporary index by a first determined number, or
  - 15 calculating a second reference magnitude of the cross-correlation function of the  $S_1[n]$  signal and the  $S_2[n]$  signal according to a second reference index ~~behind~~ lagging the first-index temporary index by a second number; and
  - (d) synthesizing the  $S_3[n]$  signal by weighting the  $S_1[n]$  signal and adding the weighted  $S_1[n]$  signal to an  $S_4[n]$  signal that lags the  $S_2[n]$  by a maximum
  - 20 index corresponding to a largest magnitude among all of the magnitudes calculated in step (c),
- wherein the  $S_1[n]$  signal has  $N_1$  elements while the  $S_2[n]$  signal has  $N_2$  elements, and the  $S_3[n]$  signal
- = the  $S_1[n]$  signal, where  $0 \leq n < \text{the maximum index}$ ;
- 25 =  $(N_1 - n) / (N_1 - \text{the maximum index}) * S_1[n] + (n - \text{the maximum index}) / (N_1 - \text{the maximum index}) * S_4[n - \text{the maximum index}]$ , where the maximum index  $\leq n$
- <  $N_1$ ;
- =  $S_4[n - \text{the maximum index}]$ , where  $N_1 \leq n \leq N_2 - \text{the maximum index}$ .

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2-3 (cancelled).

4 (currently amended): The method of claim 1 wherein step (c) further comprises:

5 (e) setting each of the magnitudes corresponding to indexes between the ~~first index~~  
temporary index and the first reference index to zero or setting each of the  
magnitudes corresponding to indexes between the temporary index and the  
second reference index to zero.

5 (original): The method of claim 1 further comprising:

10 (f) updating the threshold value according to the maximum index.

6 (original): The method of claim 1 wherein the  $S_1[n]$  signal and the  $S_2[n]$  signal are  
sampled from an  $S_1(t)$  signal and an  $S_2(t)$  signal respectively.

15 7 (original): The method of claim 6 wherein the  $S_1(t)$  signal and the  $S_2(t)$  signal are both  
derived from an original signal.

8 (original): The method of claim 7 wherein the original signal is an audio signal.

20 9 (original): The method of claim 7 wherein the original signal is a video signal.

10 (original): The method of claim 7 wherein the  $S_1(t)$  signal and the  $S_2(t)$  signal are  
identical.

25 11 (original): The method of claim 7 wherein the  $S_1(t)$  signal and the  $S_2(t)$  signal are  
different from each other.

12 (original): The method of claim 1 wherein the second number is equal to one.

30 13 (original): The method of claim 1 wherein the first determined number is larger than

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one.

14 (currently amended): A multiple step-sized levels adaptive method for time scaling to  
 synthesize an  $S_3[n]$  signal from an  $S_1[n]$  signal and an  $S_2[n]$  signal, the method  
 5 comprising:

- (a) delaying the  $S_1[n]$  signal by a predetermined number to form an  $S_5[n]$  signal;
- (b) calculating a ~~first magnitude~~ temporary magnitude of a cross-correlation function  
 of the  $S_1[n]$  signal and  $S_5[n]$  signal according to a ~~first index~~ temporary index;
- (c) comparing the ~~first magnitude~~ temporary magnitude with a threshold value;
- 10 (d) if the ~~first magnitude~~ temporary magnitude is smaller than the threshold value,  
 calculating a first reference magnitude of the cross-correlation function of the  
 $S_1[n]$  signal and the  $S_2[n]$  signal according to a first reference index ~~behind~~  
~~lagging~~ the ~~first index~~ temporary index by a first determined number, or  
 calculating a second reference magnitude of the cross-correlation function of  
 15 the  $S_1[n]$  signal and the  $S_2[n]$  signal according to a second reference index  
~~behind~~ ~~lagging~~ the ~~first index~~ temporary index by a second number; and
- (e) synthesizing the  $S_3[n]$  signal by weighting the  $S_1[n]$  signal and adding the  
 weighted  $S_1[n]$  signal to an  $S_4[n]$  signal that lags the  $S_5[n]$  signal by the  
 predetermined number plus a maximum index corresponding to a largest  
 20 magnitude among all of the magnitudes calculated in step (d),

wherein the  $S_1[n]$  signal has  $N_1$  elements while the  $S_2[n]$  signal has  $N_2$  elements, and  
 the  $S_3[n]$  signal equals:

= the  $S_1[n]$  signal, where  $0 \leq n < (\text{the predetermined number} + \text{the maximum index})$ ;

25 =  $(N_1 - n) / (N_1 - (\text{the predetermined number} + \text{the maximum index})) * S_1[n] + (n - (\text{the}$   
 $\text{predetermined number} + \text{the maximum index})) / (N_1 - (\text{the predetermined number}$   
 $+ \text{the maximum index})) * S_4[n - (\text{the predetermined number} + \text{the maximum}$   
 $\text{index})]$ , where  $(\text{the predetermined number} + \text{the maximum index}) \leq n < N_1$ ;

30 =  $S_4[n - (\text{the predetermined number} + \text{the maximum index})]$ , where  $N_1 \leq n \leq (N_2 +$   
 $\text{the predetermined number} + \text{the maximum index})$ .

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15-16 (cancelled).

17 (currently amended): The method of claim 14 wherein step (d) further comprises:

- 5       (f) setting each of the magnitudes corresponding to indexes between the ~~first index~~  
          temporary index and the first reference index to zero or setting each of the  
          magnitudes corresponding to indexes between the temporary index and the  
          second reference index to zero.

10     18 (original): The method of claim 14 further comprising:

- (g) updating the threshold value according to the maximum index.

19 (original): The method of claim 14 wherein the second number is equal to one.

15     20 (original): The method of claim 14 wherein the first determined number is larger than  
          one.